TOTOKU

Calibration Software

Medivisor

for *i2* Series

Version 3.8

User's Manual

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TOTOKU

http://www.totoku.com/display/

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— Make sure to read this Software License Agreement before use. —

Software License Agreement

Please read this Software License Agreement ("Agreement") thoroughly before using or installing Medivisor for i2 Series. By installing this software, you are agreeing to be bound by the terms of this Agreement. If you do not agree to this Agreement, return the entire package with all of its contents along with the purchase receipt to the place of purchase for a full refund.

Article 1 – Definition

1. Software identified above (hereinafter called "Software"), includes documents such as manual and specifications, etc, media, any software and such products delivered by TOTOKU from time to time under this Agreement.
2. Individual Contract means the agreement to be concluded in the form of purchase order, which shall set forth terms and conditions including, but not limited to, (a) identification of Products including model numbers (b) quantity (c) requested shipping date from Japanese port (d) price (e) payment (f) shipping instructions and shipping address.

Article 2 – Order of Precedence

The terms and conditions of this Agreement shall govern Individual Agreement. In case that terms and conditions of Individual Agreement is inconsistent or conflict with the provisions of this Agreement, the provisions of this Agreement shall prevail.

Article 3. – Grant of License

1. TOTOKU hereby grants to User and User accepts non-exclusive and non-transferable license to use, install and copy Software under this Agreement.
2. User shall use Software solely on its computer of the same number as the number of licenses. User shall not sublicense, rent or lease Software or use Software for third-party training, commercial time-sharing or service bureau use.
3. The aforesaid license granted is solely for User's operations on the designated system.

Article 4 – Limitations on License

1. User shall not cause or permit to any third party the reverse engineering, discovering the source code, disassembly, modification, update, customization or recompilation of Software.
2. User shall not use or cause to be used, license granted herein and for any purpose whatsoever other than for the purpose specified in this Agreement.
3. TOTOKU shall retain all title, copyright and other proprietary rights in Software. User shall not acquire any right, express or implied, in Software, other than those specified in this Agreement.

Article 5 – Management of Software

1. Subject to the terms and conditions hereunder, User may copy Software for archival and backup purposes and agree to label all such copies with the copyright notice designated by TOTOKU. User shall manage the copy of Software with the duty of care and diligence of a good manager and, upon TOTOKU's request, shall make a written report to TOTOKU in respect of Software copied.

2. At TOTOKU's written request, User shall furnish TOTOKU with a signed certification verifying that Software are being used pursuant to the provisions of this Agreement. TOTOKU reserves the right at any time to inspect Software at the business premises of User during the term of this Agreement to insure and maintain the quality and efficient management of Software. In case the aforesaid inspection reveals that User has underpaid fees to TOTOKU, User shall be invoiced for such underpaid fees with penalty.
3. User may change its computer where Software is to be installed in subject to prior written consent of TOTOKU.

Article 6 – After Sales Service

After sales service such as reply to inquiry, technical support, training and consulting service for Software shall be provided by TOTOKU or TOTOKU's distributor under the after sales agreement between User and TOTOKU or TOTOKU's distributor.

Article 7 – Warranty

1. Program Warranty
   (1) TOTOKU warrants that Software will perform the functions described in its manual and/or specifications during the term of this Agreement unless (a) Software is modified, disassembled or customized by the parties other than TOTOKU (b) Software is operated in combinations other than as specified in its manual and/or specifications. In addition, TOTOKU shall make its best efforts to make Software free from program error. Provided, however, that TOTOKU shall not warrant that Software is error free and uninterrupted.
   (2) In the case of breach of the foregoing warranty, TOTOKU shall make its best efforts to correct the defect or program errors by providing updated or amended version of Software. In case TOTOKU cannot correct the defect or program errors, TOTOKU may, at its option, terminate this Agreement and any payment previously made to User by TOTOKU will be refunded, less the reasonable value received by User of the use of Software to the date of the aforesaid termination.
2. Media Warranty
   (1) TOTOKU warrants that CD-ROM or other media for Software is free from defects in materials and workmanship under normal use for fourteen (14) days from the date of delivery.
   (2) In the case of breach of the foregoing warranty, TOTOKU shall replace or repair the defective media accordingly. Notwithstanding the aforesaid warranty, in case that any software made by the third party is included in Software, the provisions of the user software license agreement between User and the third party shall be applied in respect of such software.
3. TOTOKU DOES NOT MAKE AND HEREBY DISCLAIMS ANY WARRANTY IN RESPECT OF SOFTWARE OTHER THAN AS PROVIDED ABOVE IN THIS ARTICLE, WHETHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

Article 8 – Intellectual Property Right

1. User acknowledge that all patents, designs, copyrights, know how and other intellectual property rights used or embodied in connection with Software are the exclusive properties of TOTOKU, and shall not dispute them for any reason whatsoever. User shall not apply for or register any intellectual property right in connection with Software.

2. User hereby agree to advise TOTOKU immediately after User becomes aware that any intellectual property right in connection with Software is attacked or infringed upon by any third party. In the case of aforesaid attack or infringement, User shall cooperate with and aid TOTOKU for the defense proceedings at its own cost, and TOTOKU shall retain all rights to control the direction of any action thereof.
3. To the best knowledge of TOTOKU, Software will not infringe upon any intellectual property right of any third party. Notwithstanding the foregoing, in the case of any claim of infringement or alleged infringement of intellectual property rights brought by third parties in relation to Software, User shall advise, cooperate with and aid TOTOKU for the defense proceedings at its own cost, and TOTOKU shall retain all rights to control the direction of any action thereof.
4. In case that Software is held or believed by TOTOKU or any court of competent jurisdiction to infringe any intellectual property right of any third party, TOTOKU shall have the option, at its expense, to (a) modify Software to be non infringing; or (b) obtain a license for User to continue the deal of Software. If it is not commercially reasonable to perform either of the above options, then TOTOKU may terminate the license for the infringing Software and refund the license fees paid for Software to User, less the reasonable value received by User to the date of the aforesaid termination.

Article 9 – Confidential Information

1. User shall not disclose to third parties any information, which is confidential and proprietary in nature of TOTOKU in respect of Software. Such confidential and proprietary information (hereinafter called as "Confidential Information") includes, but not limited to trade secrets, know-how, inventions, patents, techniques, processes, programs, schematics, data. User agree that Confidential Information shall be kept confidential and shall not be disclosed to any other party without the written consent of TOTOKU.
2. User shall exercise the sole and proper control and supervision over any of their employees and hereby assumes full liability and responsibility of all obligations in connection with any party's employees and any activity of such employees in connection with Confidential Information.

Article 10 – Limitation of Liability

1. To the maximum extent permitted by applicable law, in no event shall TOTOKU or its distributor be liable for any special, incidental, indirect or consequential damages whatsoever including, without limitation, damages for loss of business profits, business interruption, loss of business information or any other pecuniary loss arising out of the use of or inability to use, Software or failure to provide after sales services, even if TOTOKU has been advised the possibility of such damages. In any case, TOTOKU's entire liability under any provision of this Agreement or Individual Contract shall be limited to the amount paid by User for the purchase of Software.
2. Software is not fault-tolerant and is not designed, intended, or licensed for use in hazardous environments requiring fail-safe performance, such as in the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, and life support or weapons systems, in which the failure of Software could lead directly to death, personal injury, or severe physical or environmental damage (hereinafter called as "High Risk Activities"). Without limiting the generality of the foregoing, TOTOKU specifically disclaim any express or implied warranty of fitness for High Risk Activities.

Article 11 – Export Regulations
User may take Software outside of its own country subject to the prior written consent of TOTOKU. In the case of foregoing, User shall, at its own cost and responsibility, comply with all relevant export laws and regulations of its own country (hereinafter called as "Export Laws") to assure that neither Software nor any related program thereof are (1) exported, directly or indirectly, in violation of Export Laws; or (2) are intended to be used for any purposes prohibited by Export Laws, including, without limitation, nuclear, chemical or biological weapons proliferation.

Article 12 – Taxes
User shall be solely responsible for and shall pay or reimburse TOTOKU for, all taxes, duties, assessments and other governmental charges which are now or hereafter imposed by governmental authority associated with the performance of TOTOKU's obligations under this Agreement.

Article 13 – Duration
1. This Agreement comes into force on the date first written and, unless sooner terminated, shall continue in effect for a period of one (1) year. Provided, however, that in case the parties hereto agreed to the terms and conditions in respect of the renewal or extension of this Agreement in writing prior to the expiration of the term hereof, this Agreement shall be renewed or extended for the term agreed upon.
2. In the event of expiration of this Agreement, the parties hereto shall have no claim against the other party for the loss of good will or future profit.

Article 14 – Termination
TOTOKU may, without prejudice to any other rights or remedies, terminate this Agreement or Individual Contract, if the User fails to perform any provision of this Agreement or Individual Contract.

Article 15 – Effect of termination
If this Agreement is expired or terminated under the terms and conditions herein, the parties hereto shall comply with the followings:
(1) The license granted hereunder shall terminate.
(2) User shall return to TOTOKU Software, together with all copies, in all forms and whether partial or complete, on all types of media and computer memory, and whether or not modified or merged into other material.
(3) User shall delete or remove Software and any such source code from all workstation and/or terminal pursuant to TOTOKU's directions.

Article 16 – Damages
If TOTOKU was damaged or injured due to User’s breach or default of any provision hereof or by the termination specified at the subparagraph from (1) to (5) in Article 14, TOTOKU may claim User damages thereof.

Article 17 – Survival
Article 8 (Intellectual Property Right) and 9 (Confidential Information) of this Agreement shall survive the termination or expiration hereof.

Article 18. – Severability
If any provision of this Agreement is held by a court of competent jurisdiction to be illegal or invalid, the remaining provisions hereof shall remain effect.

Article 19 – Force Majeure
Neither parties hereto shall be liable for any delay or failure to perform any of its obligations hereunder, other than the obligation to make any payment which is due, if such delay or failure is due to fire, flood, earthquake, epidemic, unusually severe weather, strike, act of God, or public enemy, public disorder, restriction by civil or military authority in their sovereign or contractual capacities, transportation failure or any other cause beyond the reasonable control of the parties.

Article 20 – Assignment and Delegation
Neither whole of this Agreement nor any part hereof shall be assignable or delegable by any party hereto without other parties' prior written consent, which shall not be unreasonably withheld. In the event of such assignment or delegation, the assigning or delegating party shall remain liable to the other parties and shall not be relieved of any obligation under this Agreement.

Article 21 – Waiver
Failure by any party to require performance by the other parties or to claim a breach of any provision of this Agreement shall in no manner be deemed to be a waiver of such provision or right on any other occasion.

Article 22 – Arbitration
All disputes, controversies or differences that may arise between the parties hereto, out of or in relation to or in connection with this Agreement or the breach hereof which have not been settled by mutual consultation, shall be finally settled by the arbitration. The arbitration shall be held in Tokyo, Japan in accordance with the Commercial Arbitration Rules of The Japan Commercial Arbitration Association. The award to be rendered shall be final and binding upon the parties hereto. Judgment upon such award may be entered in any court having jurisdiction thereof.

Article 23 – Governing Law
This Agreement shall be governed and construed in accordance with the laws of Japan.

Article 24 – Entire Agreement
This Agreement constitutes the entire and only agreement between the parties hereto and supersedes all previous negotiations, agreements and communications with respect hereto, and shall not be released, discharged, changed or modified in any manner, except by instruments signed by duly authorized officers or representatives of each of the parties hereto.

1 Introduction

1.1 Overview

Medivisor for i2 Series is a calibration software designed to calibrate TOTOKU i2 Series displays. The functions include:

- **Calibration**:
  Calibration to DICOM GSDF or other gamma curves, and color settings (for color models only)
- **Display Inspection**:
  Verification of current maximum luminance and gamma
- **Manual Adjustment**: Manual adjustment of luminance
- **Display Configuration**:
  Switching display configurations — up to three sets of luminance, gamma, and color settings saved within the display
- **Test Pattern**: Visual examination of display characteristics

1.2 Package contents

This product package contains the following items. If anything is missing, please contact your dealer.

	Item	Qty.
1	Medivisor CD-ROM	2
2	Calibration Sensor Chroma5	1

1.3 Operating environment

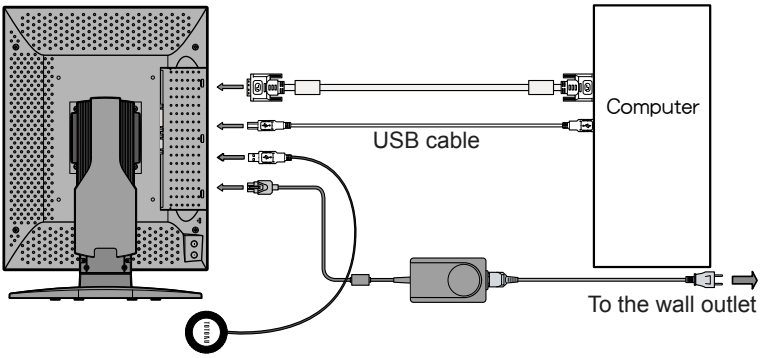
Computer	IBM PC/AT compatible machines equipped with processors equivalent to or exceeding Intel Pentium 4 or AMD Athlon 64
System memory	512MB or above
Operating System	Microsoft Windows Vista Microsoft Windows XP Professional SP2 / SP3 Microsoft Windows 2000 Professional SP4
Language	English Japanese
Supported TOTOKU Display	ME253i2, ME355i2, ME551i2, ME551i2 s, MS51i2, MS21i2, CCL252i2, CCL352i2, CCL254i2, CCL354i2
Connectable Displays	8

2 Installation

This chapter explains how to connect cables and install the hardware and software. Make sure to log in as a user with administrative privileges registered with a local computer before starting installation.

2.1 Connecting cables

Connect the USB cable supplied with the display between the USB ports on the display and the computer. For detailed information on cable connections, refer to the display user manual.



2.2 Installing the calibration sensor driver

1. Connect the supplied calibration sensor Chroma5 to the computer's USB port directly or via a USB hub. It will be detected as new hardware and the Found New Hardware Wizard starts up.

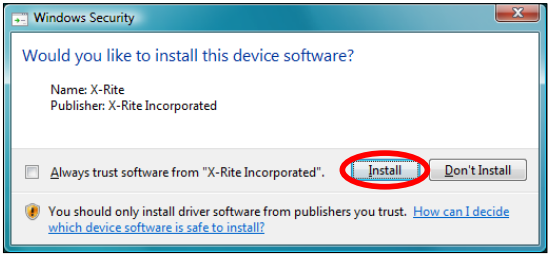
2. Insert the supplied CD-ROM Disk 1 in the CD drive on the computer. Though the software installer starts up automatically, go back to the Found New Hardware Wizard and select "Locate and install driver software (recommended)."

Found New Hardware
Windows needs to install driver software for your Calibrator
Locate and install driver software (recommended)
Windows will guide you through the process of installing driver software for your device.
Ask me again later
Windows will ask again the next time you plug in your device or log on.
Don't show this message again for this device
Your device will not function until you install driver software.
Cancel

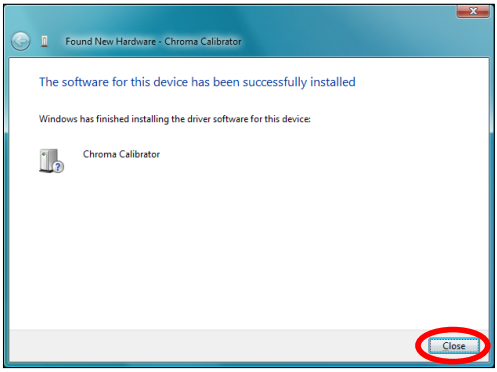
Figures used in this manual are of Windows Vista. Screens on your display may appear different according to the operating system.

The software installer can be closed or left open.

3. The following screen may appear. Click "Install."


Windows Security
Would you like to install this device software?
Name: X-Rite
Publisher: X-Rite Incorporated
Always trust software from "X-Rite Incorporated".
Install
Don't Install
You should only install driver software from publishers you trust. How can I decide which device software is safe to install?

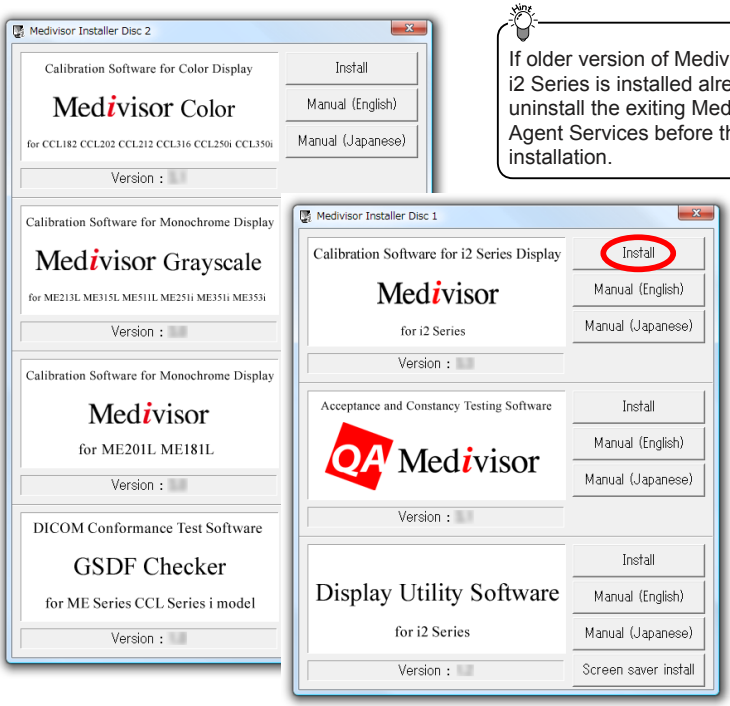
4. Click "Close" to complete installation.


Found New Hardware - Chroma Calibrator
The software for this device has been successfully installed
Windows has finished installing the driver software for this device:
Chroma Calibrator
Close

2.3 Installing Medivisor for i2 Series

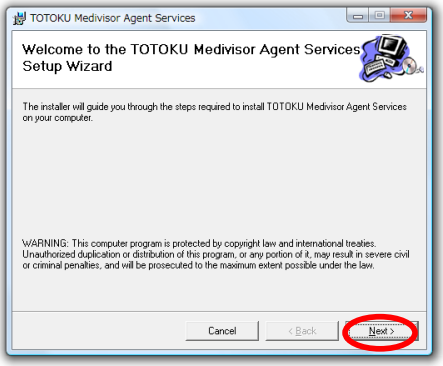
To install Medivisor for i2 Series, its setup tool Medivisor Agent Services needs to be installed. As installation begins, first the Medivisor Agent Services Setup Wizard starts. Follow the on-screen instructions to install Medivisor Agent Services. Upon completion of the Medivisor Agent Services Setup Wizard, the installer moves on to installation of Medivisor for i2 Series.

1. If the software installer is left open, click "Install." Otherwise, reinsert the CD-ROM or run **launcher.exe** on the CD-ROM to start the installer and click "Install."

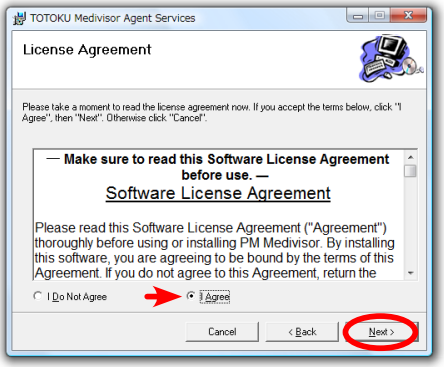


If older version of Medivisor for i2 Series is installed already, uninstall the exiting Medivisor Agent Services before the new installation.

2. The Medivisor Agent Services Setup Wizard starts. Click "Next."


TOTOKU Medivisor Agent Services
Welcome to the TOTOKU Medivisor Agent Services Setup Wizard
The installer will guide you through the steps required to install TOTOKU Medivisor Agent Services on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

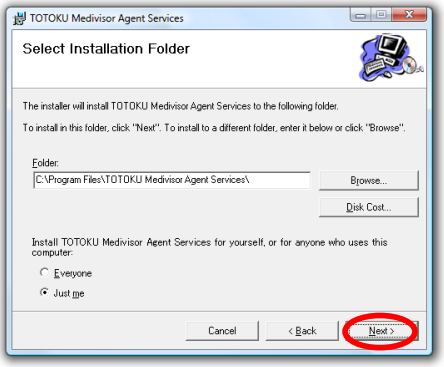
3. The License Agreement screen appears. To accept the agreement and proceed with installation, select "I Agree" and click "Next."


TOTOKU Medivisor Agent Services
License Agreement
Please take a moment to read the license agreement now. If you accept the terms below, click "I Agree", then "Next". Otherwise click "Cancel".
— Make sure to read this Software License Agreement before use. —
Software License Agreement
Please read this Software License Agreement ("Agreement") thoroughly before using or installing PM Medivisor. By installing this software, you are agreeing to be bound by the terms of this Agreement. If you do not agree to this Agreement, return the
I Do Not Agree
I Agree
Cancel
< Back
Next >

Important

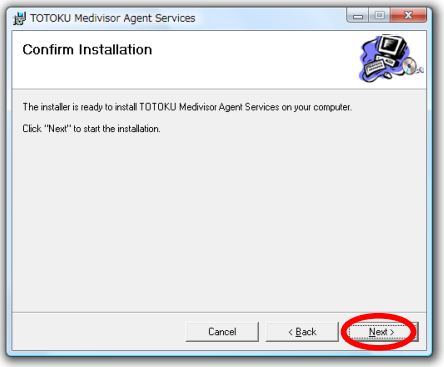
You must accept the agreement to complete installation of Medivisor Agent Services.

4. When the Select Installation Folder screen appears, select a destination folder. Further down the screen is the setting as to where the shortcut to this software should be created. To share it with all users of the destination computer, select "Everyone." To use it by yourself, select "Just me" and click "Next."

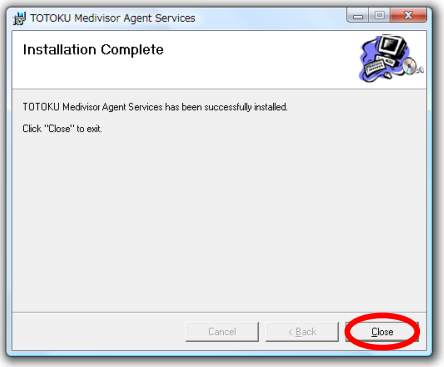

TOTOKU Medivisor Agent Services
Select Installation Folder
The installer will install TOTOKU Medivisor Agent Services to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files\TOTOKU Medivisor Agent Services\
Browse...
Disk Cost...
Install TOTOKU Medivisor Agent Services for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >

By default, the destination is **C:\Program Files\TOTOKU Medivisor Agent Services**.

5. The Confirm Installation screen appears. Click "Next" to start installing Medivisor Agent Services.

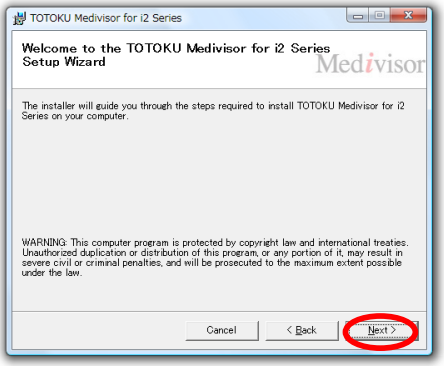

TOTOKU Medivisor Agent Services
Confirm Installation
The installer is ready to install TOTOKU Medivisor Agent Services on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

6. The Installation Complete screen appears. Click "Close" to complete installation of Medivisor Agent Services.

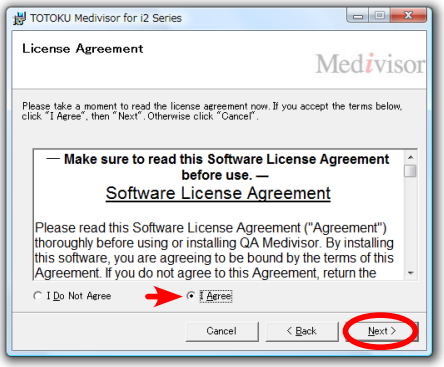


7. Upon completion of installation of Medivisor Agent Services, the Medivisor for i2 Series version information appears. Click "Next" to start installing Medivisor for i2 Series.

8. When the Setup Wizard appears, click "Next."


TOTOKU Medivisor for i2 Series
Welcome to the TOTOKU Medivisor for i2 Series Setup Wizard
Medivisor
The installer will guide you through the steps required to install TOTOKU Medivisor for i2 Series on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

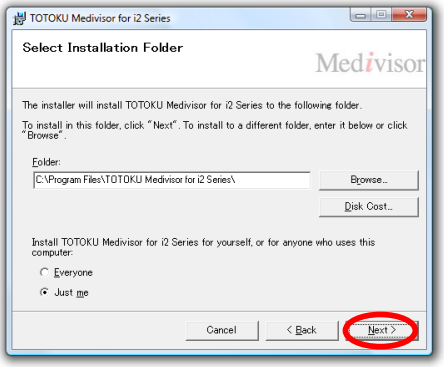
9. The License Agreement screen appears. To accept the agreement and proceed with installation, select "I Agree" and click "Next."


TOTOKU Medivisor for i2 Series
License Agreement
Medivisor
Please take a moment to read the license agreement now. If you accept the terms below, click "I Agree", then "Next". Otherwise click "Cancel".
— Make sure to read this Software License Agreement before use. —
Software License Agreement
Please read this Software License Agreement ("Agreement") thoroughly before using or installing QA Medivisor. By installing this software, you are agreeing to be bound by the terms of this Agreement. If you do not agree to this Agreement, return the
I Do Not Agree
I Agree
Cancel
< Back
Next >

Important

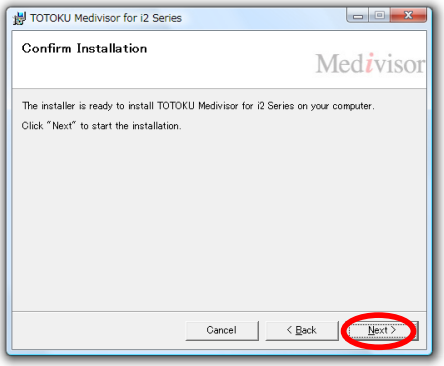
You must accept the agreement to complete installation of Medivisor for i2 Series.

10. When the Select Installation Folder screen appears, select a destination folder. Further down the screen is the setting as to where the shortcut to this software should be created. To share it with all users of the destination computer, select "Everyone." To use it by yourself, select "Just me" and click "Next."

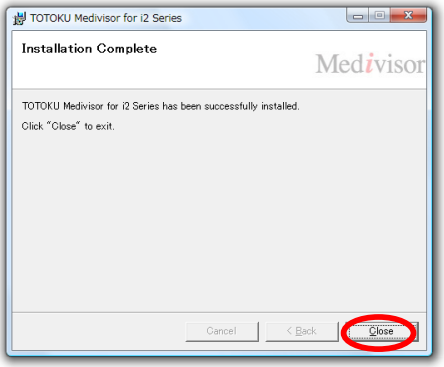

TOTOKU Medivisor for i2 Series
Select Installation Folder
Medivisor
The installer will install TOTOKU Medivisor for i2 Series to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files\TOTOKU Medivisor for i2 Series\
Browse...
Disk Cost...
Install TOTOKU Medivisor for i2 Series for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >

By default, the destination is **C:\ProgramFiles\TOTOKU Medivisor for i2 Series**.

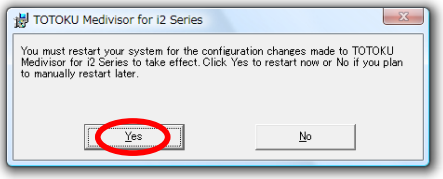
11. When the Confirmation Installation screen appears, click "Next" to start installation.


TOTOKU Medivisor for i2 Series
Confirm Installation
Medivisor
The installer is ready to install TOTOKU Medivisor for i2 Series on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >

12. When the Installation Complete screen appears, click "Close" to complete installation. Remove the CD-ROM from the CD drive.



13. A message prompting restart of the computer appears. Click "Yes" and restart the computer.


TOTOKU Medivisor for i2 Series
You must restart your system for the configuration changes made to TOTOKU Medivisor for i2 Series to take effect. Click Yes to restart now or No if you plan to manually restart later.
Yes
No

3 Setup — Medivisor Agent Services

To use Medivisor for i2 Series, a program called Medivisor Agent Services needs to be set up. Medivisor Agent Services consists of five tabs: Workstation, Display, Display Model, Sensor, and Management Station. Setup of the **Display** tab is required, however, if optional software such as QA Medivisor is not used, the rest of the tabs do not need to be set up. Follow the instructions given in the following sections to set up the tabs.

Select **TOTOKU Medivisor Agent Services>Agent Settings** from the **Start** menu, and the Agent Settings dialog box starts.

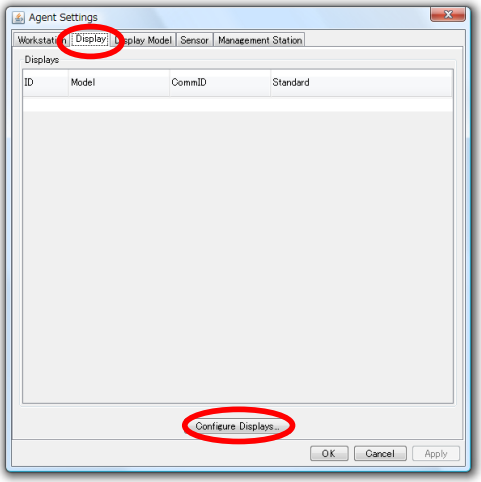
3.1 Workstation

There is no setup required in using Medivisor for i2 Series.

3.2 Display

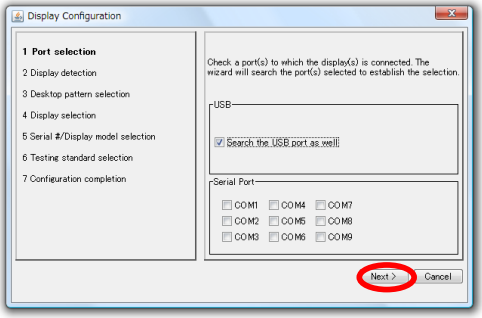
Select the **Display** tab to set up the display configuration and select a quality control (QA) testing standard(s) to apply for respective displays connected to the workstation, using the Display Configuration wizard.

Click "Display Configuration," and the display configuration wizard appears. Follow the on-screen instructions.



1) Port selection

The i2 displays support USB connection only. Check "Search the USB port as well" and click "Next."

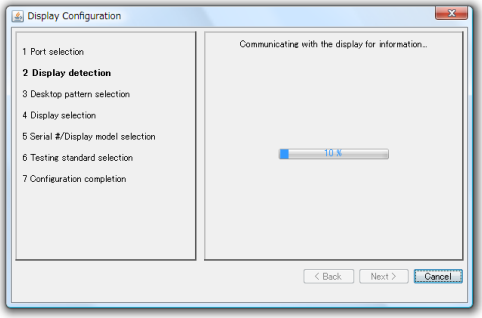

Display Configuration
1 Port selection
2 Display detection
3 Desktop pattern selection
4 Display selection
5 Serial #/Display model selection
6 Testing standard selection
7 Configuration completion
Check a port(s) to which the display(s) is connected. The wizard will search the port(s) selected to establish the selection.
USB
Search the USB port as well
Serial Port
COM1 COM4 COM7
COM2 COM5 COM8
COM3 COM6 COM9
Next >
Cancel

While displays other than i2 serries are unabale to be calibrated by this software even if they are set up in this section, other TOTOKU softoware may require to set up non-i2 displays in the same section for different purposes.

Follow the instructions in the user's manual of applicable software.

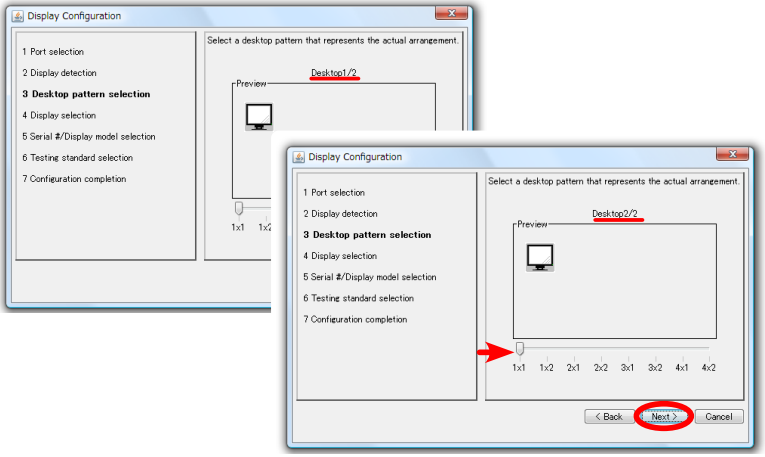
2) Display detection

As for TOTOKU displays, display information will be obtained automatically via the ports selected and the wizard moves on to the next step.



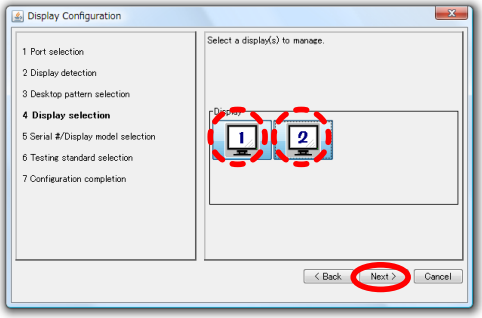
3) Desktop pattern selection

Select a desktop pattern that represents the actual display arrangement using the slider and click "Next." This step repeats itself as many times as the number of displays.



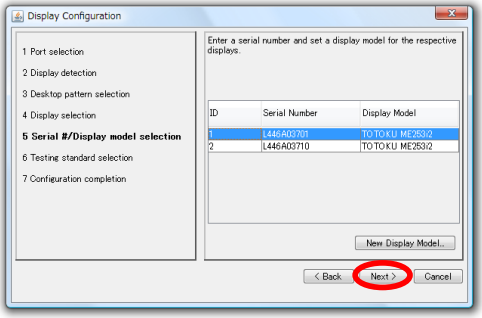
4) Display selection

All connected displays are displayed, and the numbers appear on corresponding displays as well. Select a display(s) to calibrate and click "Next."



5) Serial #/Display model selection

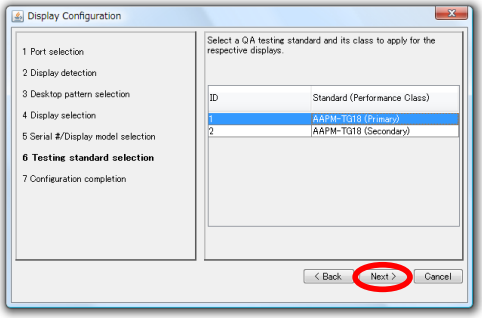
Select a serial number that matches the one that is found on the product label attached to the display or on the OSD control panel. Likewise, select a display model and click "Next."



Follow the instructions in the display's manual on how to find a serial number or a display model on the OSD control panel.

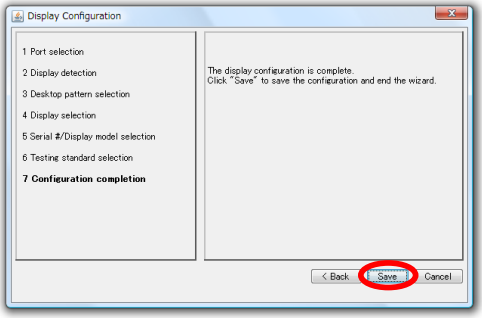
6) Testing standard selection

Select a QA testing standard and its performance class to apply for each display.



7) Testing standard selection

The display configuration is complete. Click "Save" to save the configuration and end the wizard.



3.3 Display Model

The **Display Model** tab allows users to add, edit, or remove display models. However, there is no setup required in using Medivisor for i2 Series.

3.4 Sensor

The **Sensor** tab allows users to add, edit, or remove sensors. However, there is no setup required in using Medivisor for i2 Series. The installed and connected sensor is detected automatically without the setup.

3.5 Management Station

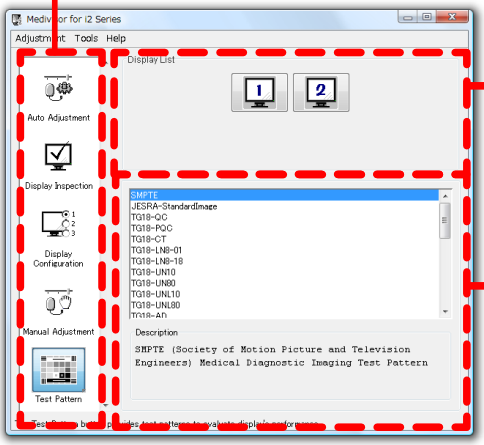
There is no setup required in using Medivisor for i2 Series.

4 Auto Adjustment

There are functions that become available only after initial calibration. Make sure to calibrate displays according to the recommended settings immediately following the initial setup. Before starting to use this software, please close all other applications. Calibrate displays at least after an hour warm-up time, excluding the time during which the screen is blacked-out because of the power save function or the screen saver.

Select **TOTOKU Medivisor for i2 Series>Calibration** from the **Start** menu to start this software. The main screen consists of the following three sections.

Adjustment Menu Area
Contains adjustment buttons. See the table below for more information.



Display Icon Area
Displays all registered displays in Madivisor Agent Services. Use the icons to select displays.

Adjustment Status Area
Shows related information and control buttons for the selected adjustment. In this example, the Test Pattern button is selected and all available patterns are shown.

Button	Name	Explanation
	Test Pattern	Displays test pattern icons. For more information, see 8.4.
	Auto Adjustment	Automatically calibrates the display.
	Manual Adjustment	Manually adjusts luminance.
	Display Inspection	Evaluates current display status (luminance and gamma). Useful to check deviation from the target calibration values.
	Display Configuration	Switches configurations. (Up to three sets of luminance, Gamma, and color settings are saved within the display.)

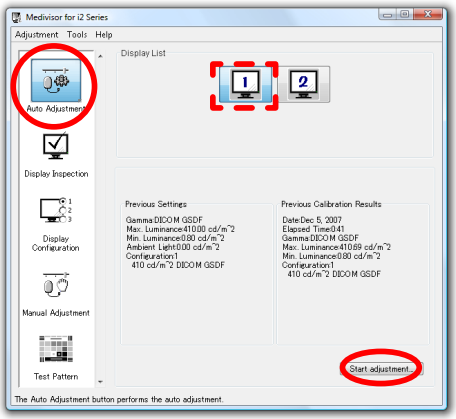
4.1 Calibration/Front Sensor Calibration

Two types of calibration can be performed:

- "Calibration" using a calibration sensor
- "Front Sensor Calibration" using a front sensor

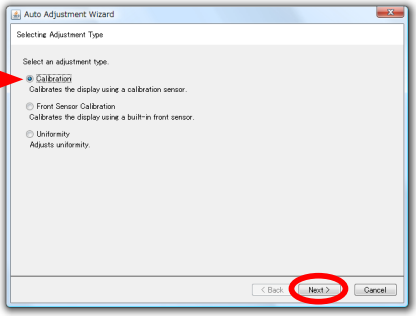
Note: Select "Calibration" for more accurate calibration.

1. Click the Auto Adjustment button in the adjustment menu area or select **Adjustment> Auto Adjustment** on the menu bar.
2. Select a display to calibrate in the Display Icon Area and click "Start adjustment."



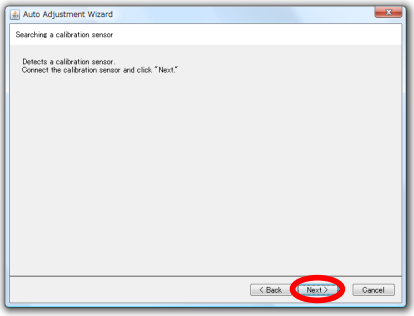
When selecting "Apply the Previous Settings," attach the calibration sensor before clicking "Start."

3. The Auto Adjustment Wizard appears. Select a calibration type and click "**Next**."

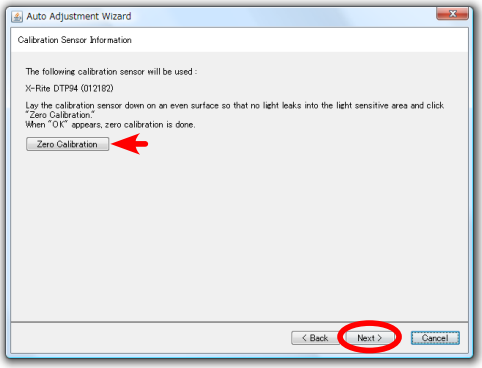


If "Front Sensor Calibration" is selected, skip the following steps of 4 and 5, and go directly to 6.

4. The calibration sensor that has been installed and connected is detected automatically. Connect the calibration sensor and click "**Next**."

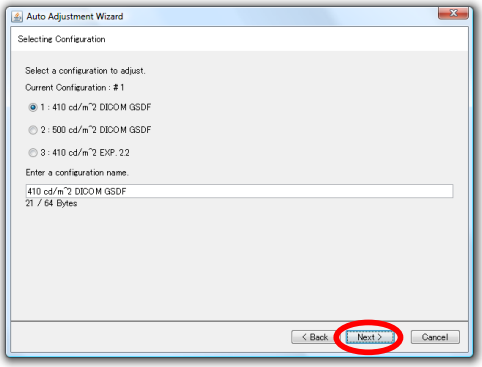


5. Information on the detected calibration sensor appears. Perform "Zero Calibration" as needed, and click "**Next**."


Auto Adjustment Wizard
Calibration Sensor Information
The following calibration sensor will be used :
X-Rite DTP94 (012182)
Lay the calibration sensor down on an even surface so that no light leaks into the light sensitive area and click "Zero Calibration."
When "OK" appears, zero calibration is done.
Zero Calibration
< Back
Next >
Cancel

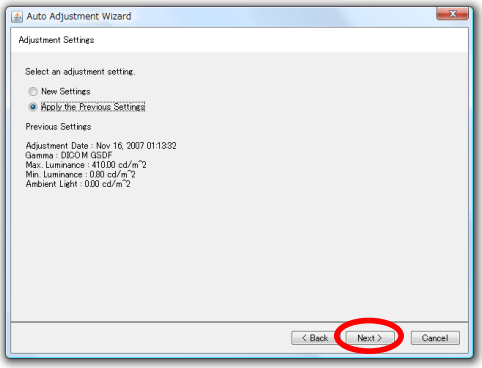
To perform “Zero Calibration,” lay the calibration sensor down on an even surface so that no light leaks into sensitive area Click "Zero Calibration”. When "OK" appears, zero calibration is done.

6. Select a configuration, name this configuration if desired, and click "**Next**."


Auto Adjustment Wizard
Selecting Configuration
Select a configuration to adjust.
Current Configuration : # 1
1 : 410 cd/m^2 DICOM GSDF
2 : 500 cd/m^2 DICOM GSDF
3 : 410 cd/m^2 EXP. 2.2
Enter a configuration name.
410 cd/m^2 DICOM GSDF
21 / 64 Bytes
< Back
Next >
Cancel

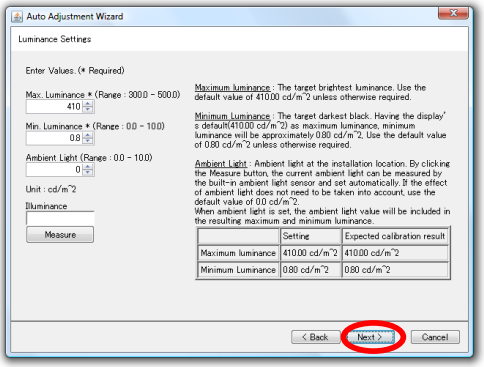
Maximum of three configurations can be saved within the display.

7. Select an adjustment setting, and click "**Next**."



Previous settings appear if any.

8. Refer to the table below and set maximum luminance, minimum luminance, and ambient light (optional) by directly entering values or using the up/down buttons, and click "**Next**." Use the following table as a rough guide in determining the input values.

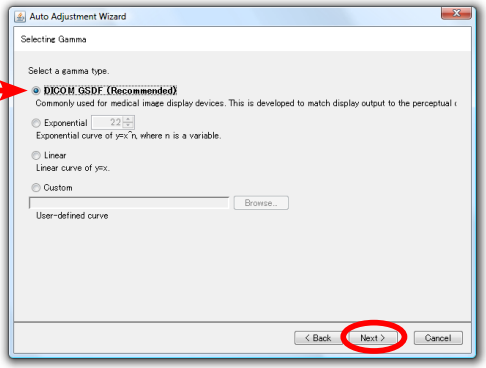

Auto Adjustment Wizard
Luminance Settings
Enter Values. (* Required)
Max. Luminance * (Range : 3000 - 5000)
410
Min. Luminance * (Range : 0.0 - 10.0)
0.8
Ambient Light (Range : 0.0 - 10.0)
0
Unit : cd/m^2
Illuminance
Measure
Maximum luminance : The target brightest luminance. Use the default value of 410.00 cd/m^2 unless otherwise required.
Minimum Luminance : The target darkest black. Having the display's default(410.00 cd/m^2) as maximum luminance, minimum luminance will be approximately 0.80 cd/m^2. Use the default value of 0.80 cd/m^2 unless otherwise required.
Ambient Light : Ambient light at the installation location. By clicking the Measure button, the current ambient light can be measured by the built-in ambient light sensor and set automatically. If the effect of ambient light does not need to be taken into account, use the default value of 0.0 cd/m^2.
When ambient light is set, the ambient light value will be included in the resulting maximum and minimum luminance.
Setting
Expected calibration result
Maximum luminance
410.00 cd/m^2
410.00 cd/m^2
Minimum Luminance
0.80 cd/m^2
0.80 cd/m^2
< Back
Next >
Cancel

Important

If the measured illuminance is over 60 Lux, an alert message to improve the ambient light appears.

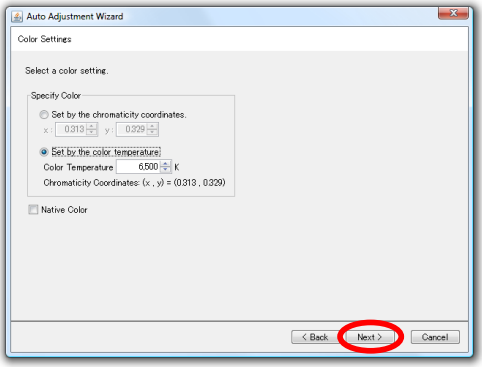
Setting	Explanation
Maximum Luminance	The target brightest luminance. Use the default value unless otherwise required. **Important:** Maximum luminance is settable within the range specified on the wizard. However, due to luminance degradation caused by deterioration of the backlight, the result may fall short of the target luminance.
Minimum Luminance	The target darkest black. Use the default value unless otherwise required.
Ambient Light (Optional)	Ambient light at the installation location. The current ambient light can be measured by clicking the Measure button. If the effect of ambient light does not need to be taken into account, use the default value of 0.0 cd/m^2. **Hint:** • Some standards or regulations may require a measured value. To manage displays according to certain standards, refer to respective relevant standards. • When ambient light is set, the ambient light value will be added to the resulting maximum and minimum luminance. For example, when the ambient light is 0.6 cd/m^2 and maximum luminance is set to 410 cd/m^2, though the display is actually calibrated to 410 cd/m^2, the resulting maximum luminance will be 410.6 cd/m^2. Also for minimum luminance, if the minimum luminance is set to 0.8 cd/m^2, the resulting minimum luminance will be 1.4 cd/m^2. • If the ambient light is too high, an alert message appears. In that case, lower the ambient light level. • The measuring method used in this software only applies to the i2 Series displays. To measure ambient light according to certain standards, refer to respective relevant standards.

9. Select "DICOM GSDF (Recommended)" and click "**Next**."



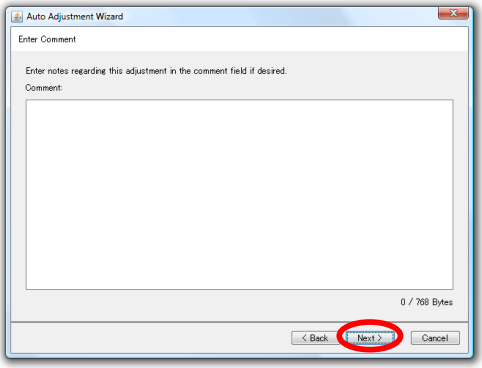
For more information, see 8.2.

10. For color models, select a color setting. Check “Native Color” to set by the native color of the LCD panel, and click "**Next**."

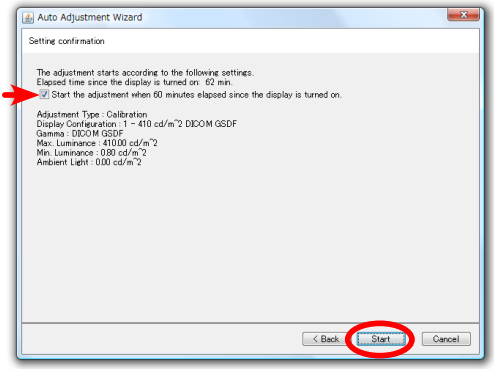


This screen does not appear for monochrome models.
The color setting is unavailable for front sensor calibration in CCL252i2 and CCL352i2.

11. Comments on this calibration or the settings can be entered here. Click "**Next**."



12. Follow the on-screen instructions; attach the calibration sensor to the center of the screen and click "**Start**."

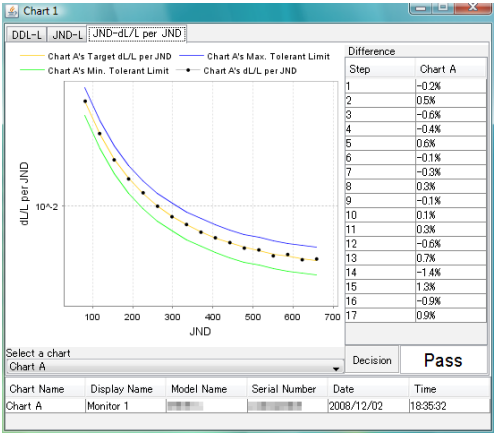

Auto Adjustment Wizard
Setting confirmation
The adjustment starts according to the following settings.
Elapsed time since the display is turned on: 62 min.
Start the adjustment when 60 minutes elapsed since the display is turned on.
Adjustment Type : Calibration
Display Configuration : 1 – 410 cd/m^2 DICOM GSDF
Gamma : DICOM GSDF
Max. Luminance : 410.00 cd/m^2
Min. Luminance : 0.80 cd/m^2
Ambient Light : 0.00 cd/m^2
< Back
Start
Cancel

Important

To stop calibration, press the ESC key on the keyboard or click "Cancel" on the wizard. Otherwise, do not touch the keyboard or use the mouse. Accurate results may not be obtained otherwise.

Check “Start the adjustment when 60 minutes...” to start the calibration automatically 60 minutes after the display is turned on.

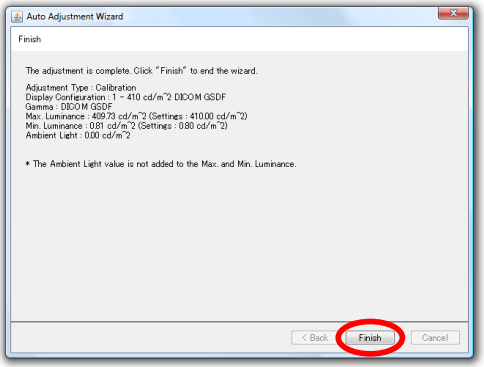
13. When calibration is completed, the results are shown graphically in another window.



For more information on each graph, see 8.5.

The graph will not close by ending the wizard. To close the graph, use the close button in the upper right corner.

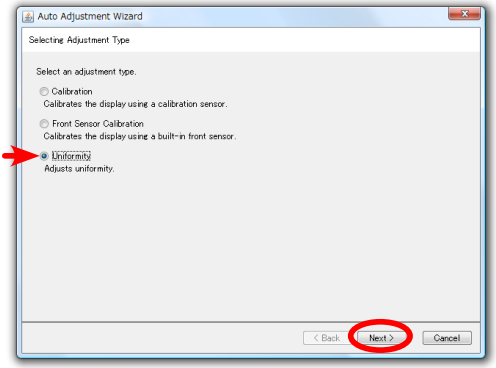
14. The wizard shows results in numerical values. Click "**Finish**" to end the wizard.


Auto Adjustment Wizard
Finish
The adjustment is complete. Click "Finish" to end the wizard.
Adjustment Type : Calibration
Display Configuration : 1 – 410 cd/m^2 DICOM GSDF
Gamma : DICOM GSDF
Max. Luminance : 409.73 cd/m^2 (Settings : 410.00 cd/m^2)
Min. Luminance : 0.81 cd/m^2 (Settings : 0.80 cd/m^2)
Ambient Light : 0.00 cd/m^2
* The Ambient Light value is not added to the Max. and Min. Luminance.
< Back
Finish
Cancel

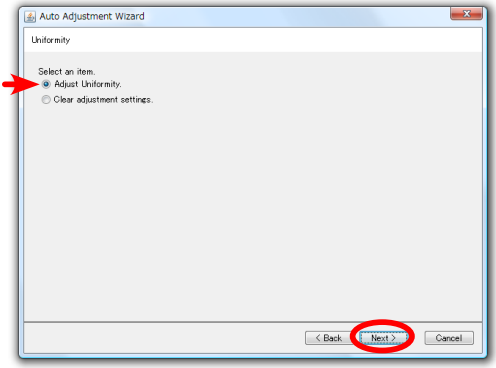
4.2 Uniformity adjustment

1. Perform Steps 1 and 2 in the previous section, 4.1.

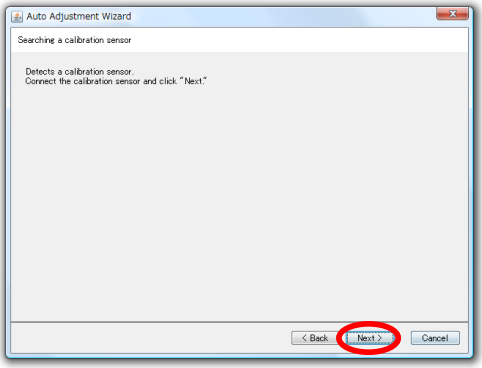
2. The Auto Adjustment Wizard appears. Select "Uniformity" and click "**Next**."



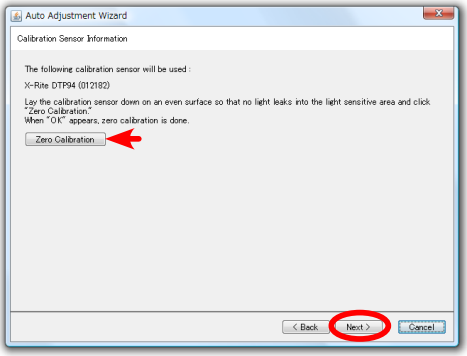
3. Select “Adjust Uniformity” and click “**Next**.”



4. The calibration sensor that has been installed and connected is detected automatically. Connect the calibration sensor and click "**Next**."

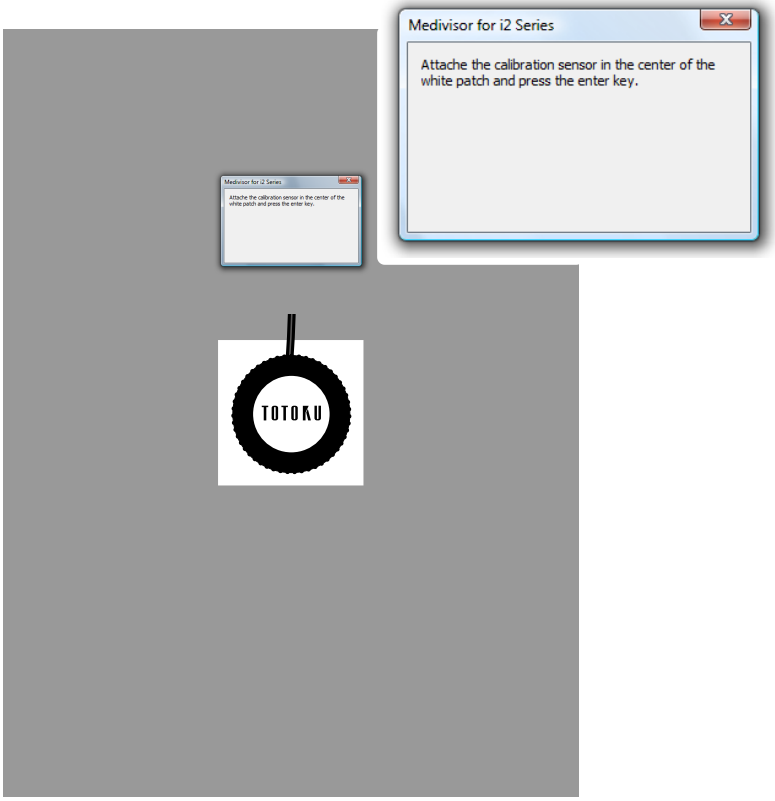


5. Information on the detected calibration sensor appears. Perform "Zero Calibration" as needed, and click "**Next**."


Auto Adjustment Wizard
Calibration Sensor Information
The following calibration sensor will be used :
X-Rite DTP94 (012182)
Lay the calibration sensor down on an even surface so that no light leaks into the light sensitive area and click "Zero Calibration."
When "OK" appears, zero calibration is done.
Zero Calibration
< Back
Next >
Cancel

To perform “Zero Calibration,” lay the calibration sensor down on an even surface so that no light leaks into sensitive area and click "Zero Calibration.” When "OK" appears, zero calibration is done.

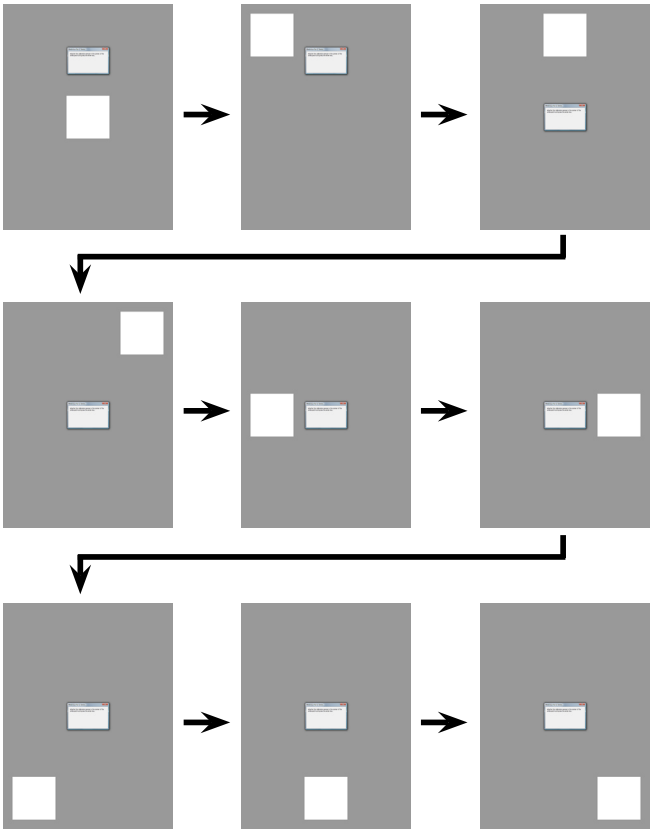
6. Attach the calibration sensor in the center of the white patch and press the Enter key.



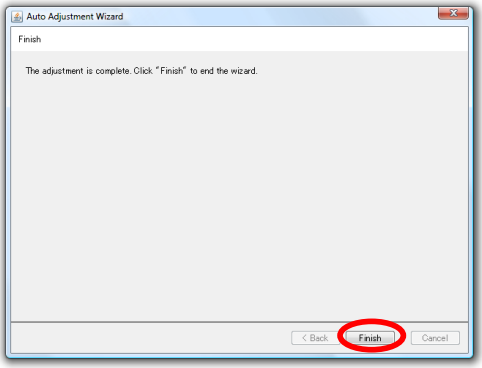
Important

Attach the sensor right-side up as shown above. To stop uniformity adjustment, press the ESC key on the keyboard or click "Cancel" on the wizard. Otherwise, do not touch the keyboard or use the mouse. Accurate results may not be obtained otherwise.

The white patch appears in 9 places on the screen in the order as shown below. Attach the calibration sensor in the center of the white patch, and press the enter key according to the instructions each time to complete the uniformity adjustment.



7. The uniformity adjustment is complete. Click "Finish" to end the wizard.



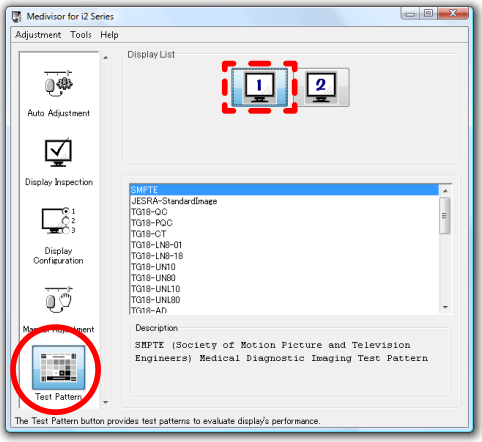
5 Useful Functions

This software is capable of various other functions. Refer to the table below and make adjustments as necessary.

Button	I want to	Corresponding Section
	Display test patterns on the screen to check display characteristics.	See 5.1, 8.3, and 8.4.
	Calibrate the display using the same settings.	See 4.1. Follow the instructions without changing the settings.
	Calibrate the display with different settings: • Change luminance • Change gamma • Change color	See 4.1. Select an appropriate adjustment type and follow the instructions on screen.
	Adjust luminance uniformity.	See 4.2.
	Manually change luminance while watching it change.	See 5.2.
	Visually check the current status of a display that has previously been calibrated against the target calibration values.	See 5.3.
	Change display configurations.	See 5.4.
Tools> Calibration History	See the latest and/or past detailed calibration information.	See 5.6: **Seeing the detailed calibration information**.
	See the latest and/or past calibration results graphically.	See 5.6: **Seeing the results graphically**.
	Compare multiple calibration records.	

5.1 Test Patterns

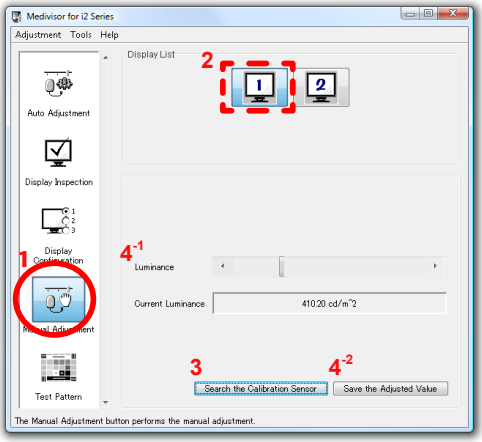
1. Click the Test Pattern button in the adjustment menu area or select **Adjustment>Test Patterns** on the menu bar, and all available test patterns are listed.
2. Select a display and a test pattern, and the pattern is displayed on the selected display in full-screen. For more information on each pattern, see 8.3.



5.2 Manual Adjustment

This function lets you adjust luminance quickly without performing regular calibration.

1. Click the Manual Adjustment button in the adjustment menu area or select **Adjustment>Manual Adjustment** on the menu bar.
2. Select a display to adjust and attach the calibration sensor.
3. Click "Search the Calibration Sensor," and the current luminance will be measured and displayed.
4. Adjust the luminance using the scrollbar handle and click "Save the Adjusted Value" to save and apply the adjusted luminance.



Important

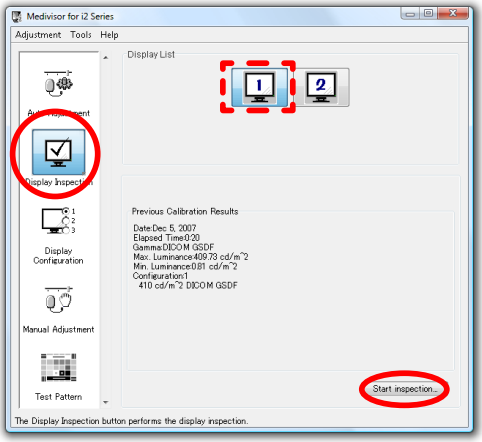
Gamma changes in concert with luminance, and other values adjusted by calibration will be invalid. Calibrate again to restore the values.

5.3 Display Inspection

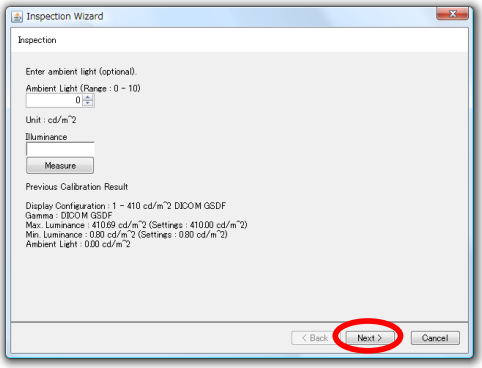
As for the displays that have previously been calibrated in the same system configuration, the current status of luminance and gamma can be evaluated against the target calibration values.

1. Click the Display Inspection button in the adjustment menu area or select **Adjustment>Display Inspection** on the menu bar.

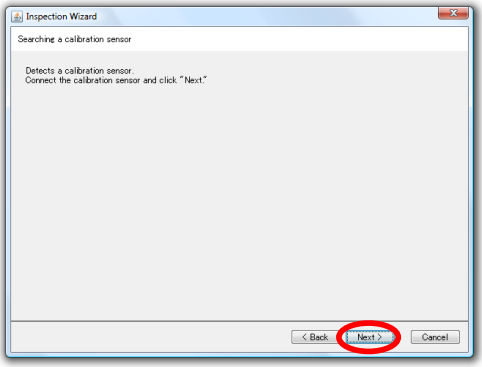
2. Select a display to inspect and click "Start."



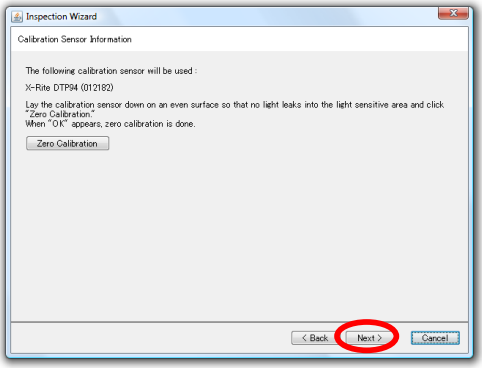
3. Enter ambient light. Unless otherwise necessary, enter the same value as it was at the time of calibration and click "Next."


Inspection Wizard
Inspection
Enter ambient light (optional).
Ambient Light (Range : 0 - 10)
0
Unit : cd/m^2
Illuminance
Measure
Previous Calibration Result
Display Configuration : 1 - 410 cd/m^2 DICOM GSDF
Gamma : DICOM GSDF
Max. Luminance : 410.69 cd/m^2 (Settings : 410.00 cd/m^2)
Min. Luminance : 0.80 cd/m^2 (Settings : 0.80 cd/m^2)
Ambient Light : 0.00 cd/m^2
< Back
Next >
Cancel

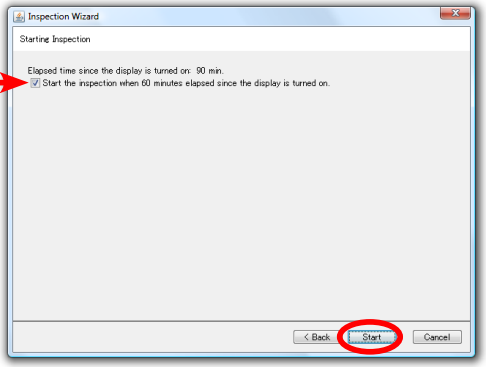
4. The calibration sensor that has been installed and connected is detected automatically. Connect the calibration sensor and click "**Next**."



5. Information on the detected calibration sensor appears. Perform "Zero Calibration" as needed, and click "**Next**."

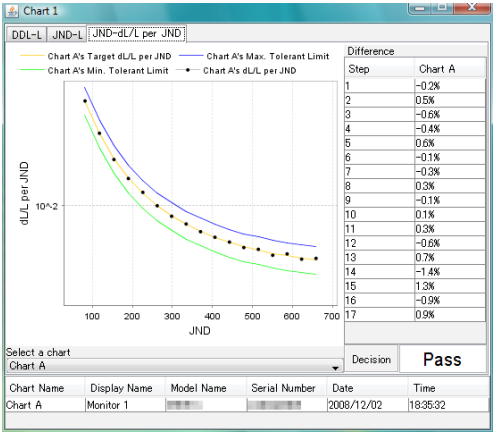

Inspection Wizard
Calibration Sensor Information
The following calibration sensor will be used :
X-Rite DTP94 (012182)
Lay the calibration sensor down on an even surface so that no light leaks into the light sensitive area and click "Zero Calibration."
When "OK" appears, zero calibration is done.
Zero Calibration
< Back
Next >
Cancel

6. Follow the on-screen instructions; attach the calibration sensor to the center of the screen and click "**Start**."


Inspection Wizard
Starting Inspection
Elapsed time since the display is turned on: 90 min.
Start the inspection when 60 minutes elapsed since the display is turned on.
< Back
Start
Cancel

Check “Start the inspection when 60 minutes...” to start the inspection automatically 60 minutes after the display is turned on.

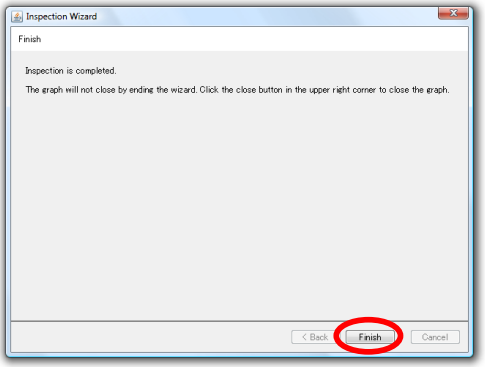
7. The results are shown graphically in another window.



For more information on each graph, see 8.5.

The graph will not close by ending the wizard. To close the graph, use the close button in the upper right corner.

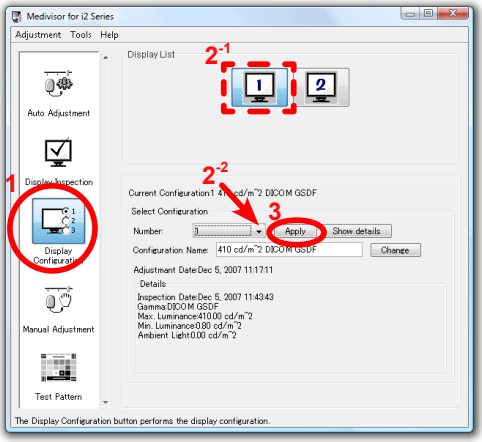
8. Click "Finish" to end the wizard.


Inspection Wizard
Finish
Inspection is completed.
The graph will not close by ending the wizard. Click the close button in the upper right corner to close the graph.
< Back
Finish
Cancel

5.4 Display Configuration

The supported i2 Series displays can save up to three pairs of luminance-Gamma-color settings as configuration data within the display upon calibration and they can be switched very easily.

1. Click the Display Configuration button in the adjustment menu area or select **Adjustment>Display Configuration** on the menu bar.
2. Select a display and a configuration in the **Number** drop-down menu.
3. Click "Apply" to apply the configuration settings to the display.



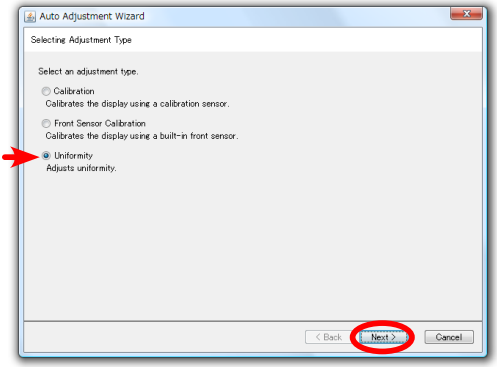
- The **Number** drop-down menu lists all available configurations.
- To change configuration name, rename it and click "Change."
- To see calibration settings, click "Show details."

5.5 Clearing the uniformity adjustment settings

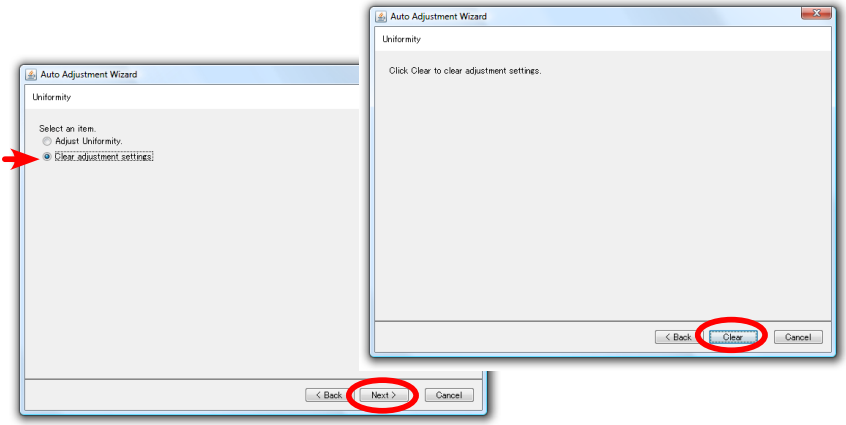
This function restores default uniformity adjustment settings.

1. Perform Steps 1 and 2 in the previous section, 4.1.

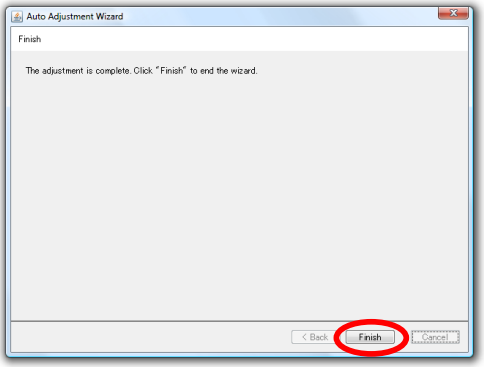
2. The Auto Adjustment Wizard appears. Select "Uniformity" and click "**Next**."



3. Select “Clear adjustment settings” and click “**Next**.” Click “**Clear**” on the next screen.



4. The uniformity adjustment clearing is complete. Click "**Finish**" to end the wizard.

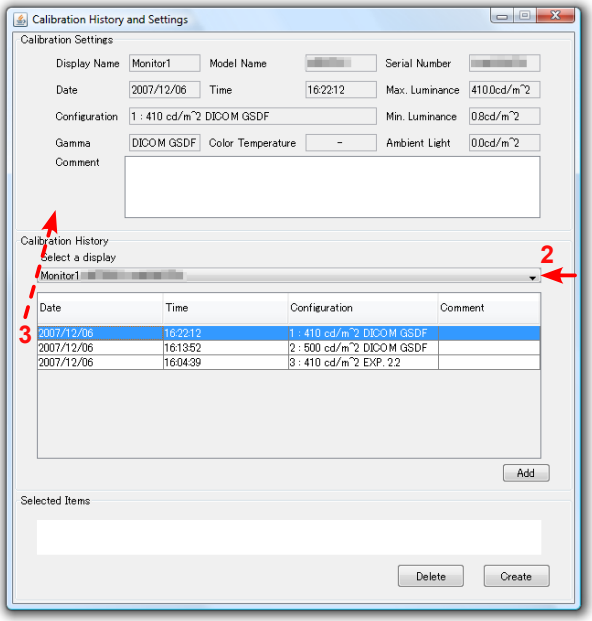


5.6 Calibration History

This function presents past calibration records both graphically and numerically for browsing and comparison.

● Seeing the detailed calibration information

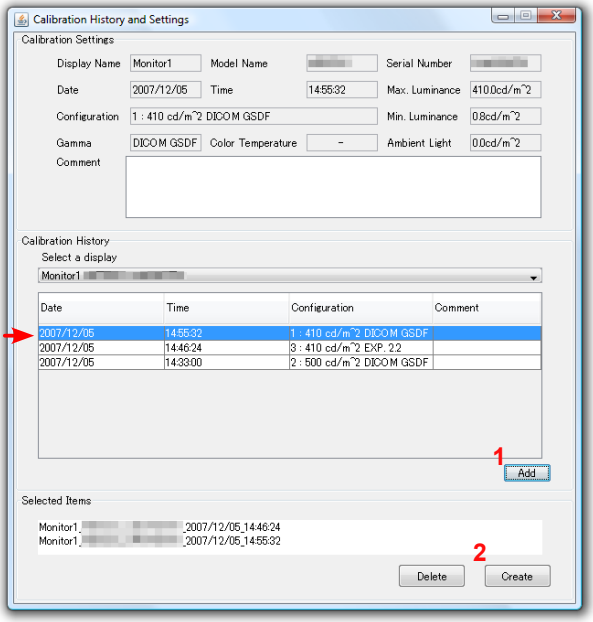
1. Select **Tools>Calibration History** on the menu bar.
2. Select a display in the **Calibration History** section, and the calibration records for the display appear below.
3. Select a record, and the detailed settings information appears in the **Calibration Settings** section.



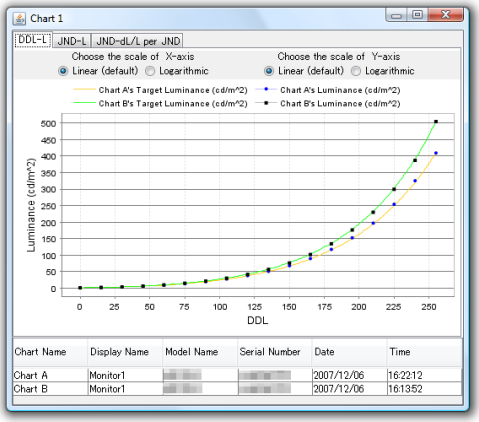
● Seeing the results graphically

1. Select a calibration record and click "Add," and it will be added to the **Selected Items** section. To compare with other records, select multiple records in the same way.

2. Click "Create."



3. The selected calibration record(s) is shown graphically in another window.



For more information on each graph, see 8.5.

The graph will not close by ending the wizard. To close the graph, use the close button in the upper right corner.

6 Uninstallation

To uninstall Medivisor for i2 Series, select **Control Panel>Uninstall a program** from the **Start** menu and remove **TOTOKU Medivisor for i2 Series**. After uninstallation, the TOTOKU Medivisor for i2 Series folder may remain in the redirected folder or the installed folder. Delete the folder manually.
In addition, uninstall Medivisor Agent Service in the same way if necessary.

7 Troubleshooting

Problem: A communication error occurs upon startup of this software or during calibration.

Solution: The communication cable may not be connected properly. Check the connection (see 2.1). Also, make sure to shut down other applications to avoid the error before starting up this software.

Note: When PM Medivisor is used together with this software, a communication error may occur. In that case, shutdown this software once and wait for a little while before restarting.

Problem: The calibration sensor Chroma5 does not get recognized or an error message to this effect, such as "Cannot found the photometer," appears.

Solution: Depending on the computer, Chroma5 does not get recognized when the computer is turned on with Chroma5 being connected.

How to find out whether or not the calibration sensor is recognized:

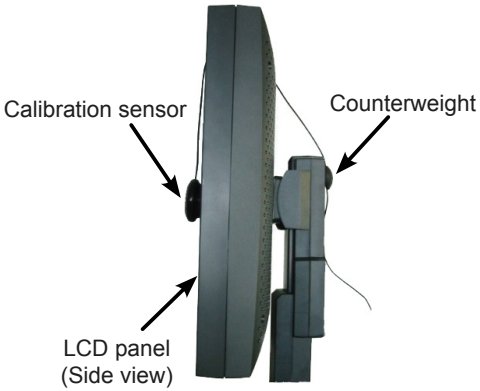
1. Right-click My Computer on the desktop and select "Properties."
2. When the System Properties screen appears, click "Device Manager."
3. The Device Manager screen appears. Click the + mark next to "X-Rite Devices" to expand it. If Chroma5 is recognized, "Chroma Calibrator" should be listed; if it is not recognized, it says either "Other Devices" or "USB Device."

How to get Chroma5 recognized:
If Chroma5 does not get recognized, reconnect Chroma5 after the operating system started.

8 Appendix

8.1 Attaching the calibration sensor

1. Peel the paper off the adhesive pad.
2. Attach the calibration sensor to the center of the measuring area by adjusting the position of the counterweight on the cord. Be careful not to damage the panel surface with either the calibration sensor or the counterweight.



Front view

Note:
Keep the LCD panel at the same tilt angle as it is in use. Do not further tilt or straighten the panel for calibration.

About the adhesive pad

When adhesion is lost, exchange it with the supplied replacement part according to the following procedure:

Replacement part
(Upper side)

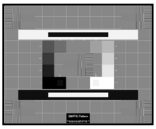
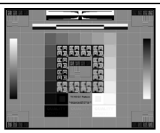
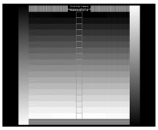
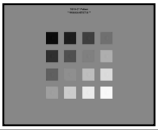
Replacement part
(Reverse)

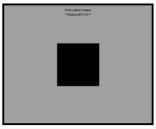
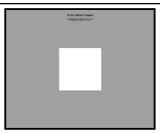
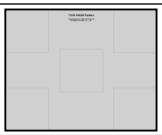
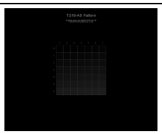
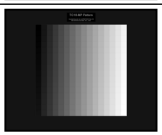
• Give the exchange part of the sensor a turn to the left, set the supplied replacement part, and give the part a turn to the right to secure it.

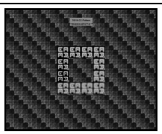
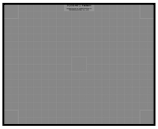
8.2 Gamma

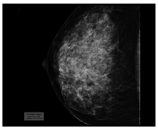
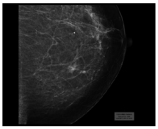
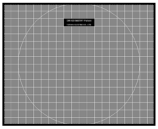
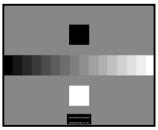
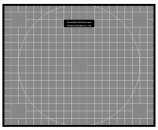
Gamma	Explanation
DICOM GSDF	Grayscale display function that DICOM sets and commonly used for medical image display devices. This is developed to match display luminance output to the perceptual capabilities of the human visual system.
Exponential	Exponential curve of $y=x^n$, where n is a variable. Calibration setting to make an input signal to the display and display luminance exponential. After the calibration, the display luminance is proportional to n-th power of the input signal, generally where n is 2.2 or 2.4.
Linear	Linear curve of y=x. Exponential curve, where n is 1. The display luminance is proportional to the input signal.
Custom	User-defined curve. Custom gamma can be created and modified using **Sample.usg** located in the directory where this software is installed (Medivisor for i2 Series\var\Sample.usg). Open the file in a text editor and change values.

8.3 Test Patterns

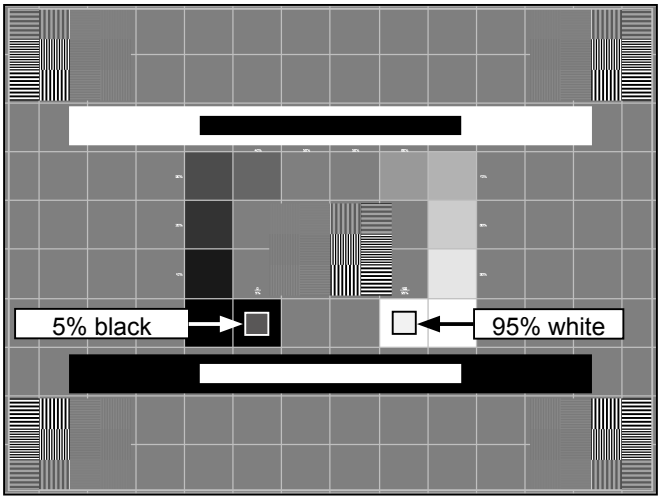
Pattern	Name	Explanation
	SMPTE	SMPTE (Society of Motion Picture and Television Engineers) Medical Diagnostic Imaging Test Pattern
	JESRA-Standard Image	JESRA (Japan Engineering Standard of Radiation Apparatus) standard clinical image
	TG18-QC	Resolution, luminance, distortion, artifacts
	TG18-PQC	Resolution, luminance, contrast for prints
	TG18-CT	Luminance response

Pattern	Name	Explanation
	TG18-LN8-01	Luminance response. The pixel value of the central region is 0.
	TG18-LN8-18	Luminance response. The pixel value of the central region is 255.
	TG18-UN10	Luminance and color uniformity
	TG18-UN80	Luminance and color uniformity
	TG18-UNL10	Luminance and color uniformity
	TG18-UNL80	Luminance and color uniformity
	TG18-AD	Contrast threshold at low luminance for evaluating diffuse reflection
	TG18-MP	Luminance response (bit-depth resolution)
	TG18-RH	5 horizontal lines at 3 luminance levels for LSF evaluation
	TG18-RV	5 vertical lines at 3 luminance levels for LSF evaluation

Pattern	Name	Explanation
	TG18-PX	Array of single pixels for spot size
	TG18-CX	Array of Cx patterns and a scoring reference for resolution uniformity
	TG18-LPH	Horizontal bars with 1 pixel width and 1/16 modulations at 3 luminance levels
	TG18-LPV	Vertical bars with 1 pixel width and 1/16 modulations at 3 luminance levels
	TG18-AFC	Display noise
	TG18-NS	Similar to RV/RH, for noise evaluation
	TG18-GV	Veiling glare (for visual evaluation)
	TG18-GVN	Veiling glare (for visual evaluation)
	TG18-GQ	Dark-spot pattern for glare ratio measurement
	TG18-CH	Anatomical chest pattern

Pattern	Name	Explanation
	TG18-KN	Anatomical knee pattern
	TG18-MM	Anatomical mammogram pattern
	TG18-MM2	Anatomical mammogram pattern
	DIN-GEOMETRY	For evaluations on geometric properties such as distortion, line structure, artifact, and instability
	DIN-GRAYSCALE	Grayscale reproduction evaluation
	DIN-RESOLUTION	Resolution evaluation
	DIN-LUMINANCE-DEVIATION	Luminance deviation between the center and four corners (for quantitative evaluation)

8.4 SMPTE Pattern



Grayscale:

The middle section of the pattern contains gray levels from 0% to 100% in increments of 10%. You can check the smoothness or continuity of grayscale. Check to see if there is:

- Clear distinction between 100% and 95% whites (The small 95% square within the 100% white square should be visible.), and
- Clear distinction between 0% and 5% blacks (The small square within the 0% black square should be visible.).

Resolution:

Each line in vertical and horizontal stripes in the squares in the center and four corners should be distinguishable.

Linearity:

Check for distortion using the grids across the screen.

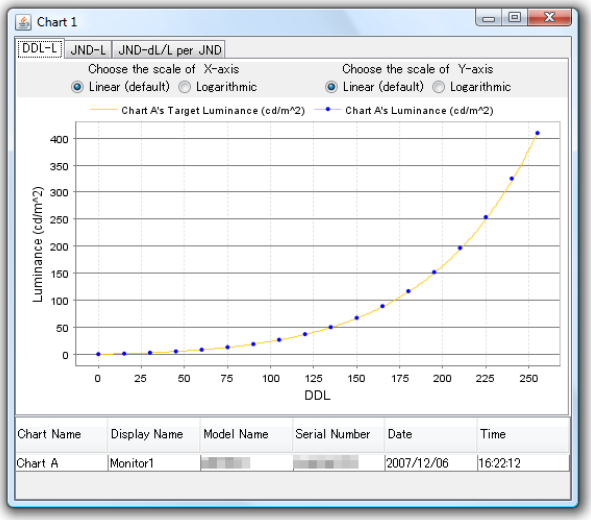
Video Characteristics:

Check for streaking in and around the white and the black rectangles.

8.5 How to read the graphs

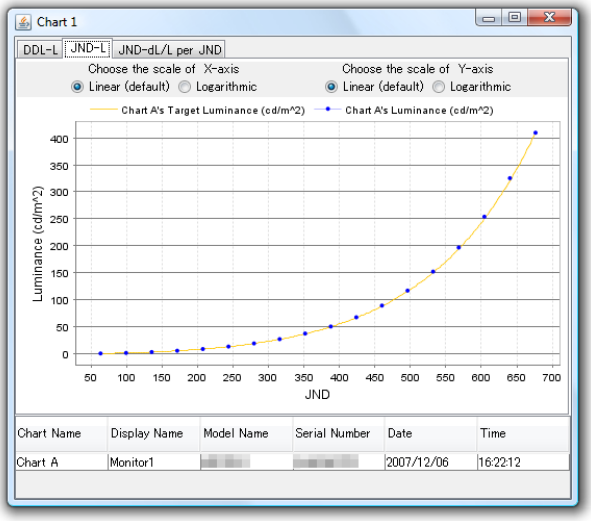
DDL-L

Where X-axis is DDL, Y-axis is luminance. You can choose the scale of the axis between linear (default) and logarithmic. The full line represents the target and the dotted line indicates the actual measurement.



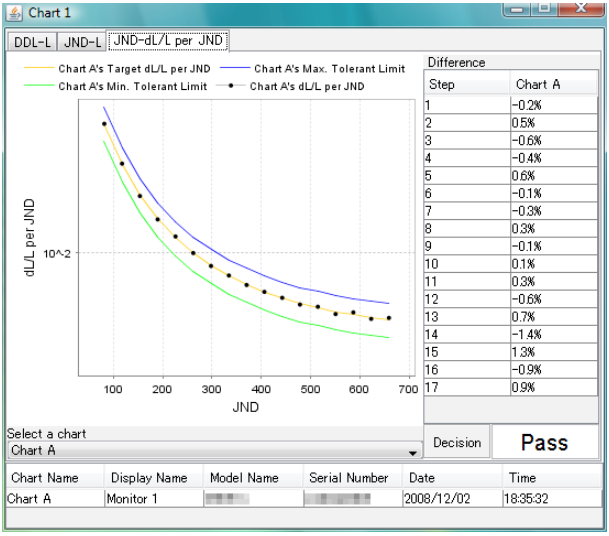
JND-L

Where X-axis is JND, Y-axis is luminance. You can choose the scale of the axis between linear (default) and logarithmic. The full line represents the target and the dotted line indicates the actual measurement. This graph is only available when the display was calibrated to DICOM GSDF (gamma setting).



JND-dL/L per JND

Where X-axis is JND (linear scale), Y-axis is dL/L per JND (logarithmic scale). The full line represents the target and maximum and minimum allowable limit, and the dotted line indicates the actual measurement. This graph is only available when the display was calibrated to DICOM GSDF (gamma setting).



When multiple calibration records are selected to create their graphs, select the record to show its graph in drop-down box of “Select a chart.”

The allowable limit is determined according to the QA testing standard and its performance class selected to apply for each display.

QA testing standard	Performance class	Allowable limit	Note
AAPM TG18	Primary	±10%	
	Secondary	±15%	
JESRA	Grade A	±15%	
	Grade B	±30%	
DIN V 6868-57	Class A	±10%	These alllowable limits are unstanderdized.
	Class B	±15%	

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Notes for the User's Manual

• No part of this manual, whether partly or wholly, may be reproduced or copied without authorization.
• The content of this manual is subject to change without notice.
• Although this manual has been prepared carefully, please let us know if you find any errors, omissions, or ambiguous explanations.

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Medivisor for i2 Series
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